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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/758,370

Applicant(s)

BARGERON ET AL.

Examiner

GIOVANNA COLAN

Art Unit

2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 and 33-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-32 is/are allowed.
- 6) ☒ Claim(s) 1-23 and 33-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/08)
Paper No(s)/Mail Date See Continuation Sheet
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :05/13/2004, 07/20/2005, 07/25/2005, 02/21/2006, 08/22/2006, 10/31/2006, 10/20/2006, and 01/23/2007.

DETAILED ACTION

1. This action is issued in response to the Amendment filed on 01/11/2008.
2. Claims 1, 25, 33, 38, 39, 40, and 42 were amended. No claims were canceled.
No claims were added.
3. Claims 1 –23, and 33 – 42 are pending in this application.
4. Claims 24 – 32 are allowed.

Information Disclosure Statement

5. The information disclosure statement (IDS) submitted on 05/13/2004, 07/20/2005, 07/25/2005, 02/21/2006, 08/22/2006, 10/31/2006, 10/20/2006, and 01/23/2007. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Response to Arguments

6. Applicant's arguments with respect to claims 1 – 23, and 33 – 42 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 1 – 23, and 33 – 40, and 42 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1 is directed to "software per se". Specifically, Claim 1 is addressed to a "system" that can be interpreted as referring to lines of programming within a system, rather than referring to the system as a physical object. The claimed invention is also addressed to "a component that receives...", "a search component", and "a comparison component" that are not a hardware system but are software (see also [0034], specification of the disclosure, "...the terms **"component," "handler," "model," "system,"** and the like are intended to refer to a computer-related entity, either hardware, a combination of hardware and software, **software, or software in execution**. For example, a component may be, but is not limited to being, a process running on a processor, a processor, an object, an executable, a thread of execution, a program, and/or a computer"). Accordingly, the claim becomes nothing more than sets of software instructions which are "software per se".

Claim 33 is directed to "software per se". Specifically, Claim 33 is addressed to a "system" that can be interpreted as referring to lines of programming within a system, rather than referring to the system as a physical object. The claimed invention is also addressed to "means for generating an image of an electronic...", "means for capturing", "means for generating a signature corresponding with the generated ...", "means for generating a signature corresponding to the captured ...", "means for iteratively comparing...", and "means for retrieving..." that are not a hardware system but are software (see also [0034], specification of the disclosure see also [0034],

specification of the disclosure, "...**system**," and the like are intended to refer to a computer-related entity, either hardware, a combination of hardware and software, **software, or software in execution...**"). Accordingly, the claim becomes nothing more than sets of software instructions which are "software per se".

Claim 38 is directed to "software per se". Particularly, claim 38 is addressed to a "system" that can be interpreted as referring to lines of programming within a system, rather than referring to the system as a physical object. The claimed invention is also addressed to "a query component ...", "a caching component", and "a comparison component" that are not a hardware system but are software (see also [0034], specification of the disclosure). Accordingly, the claim becomes nothing more than sets of software instructions which are "software per se".

Claims 39 and 40 recite "computer readable medium" which appears to be directed to non-statutory subject matter, such as software per se (see [0034] of the specification of the disclosure). Additionally, Applicant has not provided an explicit and deliberate (i.e., limiting) definition of the terminology.

Applicant should duly note that for a claim to be statutory, a claimed computer-related process must either: (A) result in a physical transformation outside the computer for which a practical application is either disclosed in the specification or would have been known to a skilled artisan, or (B) be limited to a practical application with useful, concrete and tangible result.

Claim 42 fails to be limited to embodiments which fall within a statutory category. Particularly, the claim recites "signal having one or more data packets..." which does not appear to be a process, machine, manufacture, or composition of matter. See, e.g., *In re Nuijten*, Docket no. 2006-1371 (Fed. Cir. Sept. 20, 2007)(slip. op. at 18)("A transitory, propagating signal like Nuijten's is not a process, machine, manufacture, or composition of matter.' ... Thus, such a signal cannot be patentable subject matter.")

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1 – 4, 7 – 9, 11 – 12, 19 – 22, 33 – 36, 38 – 40, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao (US Patent No. 6,487,301 B1, in view of Lienhart et al. (Lienhart hereinafter) (US 6,470,094) and Hale et al. (Hale hereinafter) (US 6,928,548).

Regarding Claim 1, Zhao discloses a system for document retrieval and/or indexing comprising:

a component that receives a captured image of at least a portion of a physical document (Col. 4, and 7, lines 20 – 22 and 33 – 36, and 25 – 35; respectively, “receives the digital representation”, Zhao¹);

a search component that locates a match to the physical document (Col. 4, lines 44 – 47, “the first digital document is searched..”, Zhao; see Col. 7, lines 25 – 30, “...The digital representation may have been made from an analog form and the physical part of the analog form”, and Col. 4, lines 33 – 36, “...analog form 203 is a printed or faxed document...”, Zhao), the search is performed over word-level topological properties of generated images (Col. 4, lines 45 – 47, “search to find the confusing alphanumeric characters and a character string ...”, Zhao), the generated images being images of at least a portion of one or more electronic documents (Col. 4, lines 6 – 10, Zhao).

¹ Wherein the prior art Zhao further discloses the physical document specifically in Col. 4 and 7, lines 33 – 38 and 25 – 35; respectively.

Zhao also discloses width of words (Col. 4, lines 49 – 52, Zhao²). However, Zhao is silent with respect to that such word-level topological properties comprise at least respective widths of words on the generated images. On the other hand, Lienhart discloses a system and method similar to the one of Zhao including word-level topological properties comprise at least respective widths of words on the generated images (Col. 10, lines 6 – 15, Lienhart). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Lienhart's teachings to the system of Zhao. Skilled artisan would have been motivated to do so, as suggested by Lienhart (Col. 10, lines 13 – 14, Lienhart), to reduce the complexity and later enable a more stable text tracking throughout time.

The combination of Zhao in view of Lienhart also discloses a comparison component that compare signatures associated with captured image with signatures associated with generated images (Col. 5, lines 51 – 65, Zhao; and Col. 7, lines 25 – 30, "...The digital representation may have been made from an analog form and the physical part of the analog form", and Col. 4, lines 33 – 36, "...analog form 203 is a printed or faxed document...", Zhao) **to facilitate location of a match to the physical document** (Col. 6, lines 40 – 46, "can be used not only to authenticate analog forms of documents that exist primarily in digital form, but also to authenticate documents that exist primarily or only in analog form, for example paper checks and identification cards.", Zhao). However, the combination of Zhao in view of Lienhart does not explicitly disclose the details of such comparison, such as: iteratively comparing a portion of a

² Wherein the overlap representation implies the width of the words as claimed.

signature associated with the captured image with portions of signatures respectively associated with the generated images. On the other hand, Hale discloses: a comparison component that iteratively compares a portion of a signature associated with the captured image with **corresponding** portions of signatures respectively associated with the generated images and excludes each generated image whose portions of the signature does not match the portion of the signature of the captured image, the portion of the signature associated with the captured image and the portion of the signatures respectively associated with the generated images that are compared become progressively smaller with each iteration, where one or more iterations are performed until a predetermined threshold number of generated images remain (Fig. 5, Col. 5, lines 25 – 55, "Referring now to Fig. 5, a flowchart of the operations for verifying the integrity of stored information, such as a post-relocation image For integrity verification, the post-relocation image of a digitally signed image is reconverted to a pre-relocation image..... Thereafter, pre-relocation image produce a hash value (referred to as the 'reconverted hash value').... The digital signature of the digitally signed image is accessed and the hash value of the digital signature is recovered (block 520). This may be accomplished by running the digitally signed image through the digital signature algorithm being provided with a public key of the signatory for decode purposes. Thereafter, the recovered hash value is compared to the reconverted hash value (block 530)...", wherein the step of comparing the hash value of the pre-relocation image ('recovered hash value') and the hash value ('reconverted hash value') of the post-relocation image correspond to the step of comparing a portion of a signature

associated with captured image with corresponding portions of signatures respectively associated with generated images claimed; note that the hash values are portions of the signatures, see Col. 5, lines 4 - 6; also see Col. 6 - 7, lines 62 - 67 and 1 - 5, "If the matching of the identifier ... This process continues until all entries in the import table have corresponding entries in the BRIT..."; wherein it is clear from Fig. 7 that such process is included in a loop starting with items 740 - 780 and 780-720. This involves repeating the comparison; therefore, it discloses an iteratively comparison as claimed; Col. 7, lines 34 - 38, "Otherwise, the BRIT is not verified..."; wherein the step of "not verifying" corresponds to the step of excluding as claimed; Hale). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Zhao in view of Lienhart by incorporating the step of iteratively comparing portions of signatures, in the same conventional manner as disclosed by Hale. Skilled artisan would have found it motivated to use such a modification in order to verify the integrity of stored information, see Hale (Col. 5, lines 31 - 33).

Regarding Claim 2, the combination of Zhao in view of Lienhart and further in view of Hale (Zhao/Lienhart/Hale hereinafter) discloses a system, further comprising a component that generates signature(s) corresponding to one or more of the generated images and generates a signature corresponding to the captured image of the physical document (Col. 4 and 5, lines 33 - 36 and 51 - 58; respectively, "can make the digital signature by encrypting the digest ...", Zhao), the signatures identify the word-layout of the generated images (Col. 5 and 6, lines 57 - 58 and 53 - 59; respectively, Zhao), and

the search performed via comparing the signatures of the generated images with the signature of the captured image of the physical document (Col. 4 and 5, lines 33 – 36 and 59 – 65; respectively, Zhao).

Regarding Claim 3, Zhao/Lienhart/Hale discloses a system, the signatures being at least one of hash tables and approximate hash tables, or combination thereof (Col. 9, lines 13 – 18, Zhao).

Regarding Claim 4, Zhao/Lienhart/Hale discloses a system, the at least one of the hash tables or approximate hash tables comprising a key (Col. 4, lines 23 – 27, “a key”, Zhao) that is associated with a location and width of a word within at least one of the generated images or the captured image of the physical document, or combination thereof (Col. 4, lines 28 – 36 and 47 – 52, Zhao³).

Regarding Claim 7, Zhao/Lienhart/Hale discloses a system, the signature(s) corresponding to the one or more generated images comprise a tolerance for error (Col. 13 – 14, lines 66 – 67 and 1 – 6, Zhao).

Regarding Claim 8, Zhao/Lienhart/Hale discloses a system, a portion of the signature(s) associated with the one or more generated images is compared to a

³ Wherein the order of the characters corresponds to the location claimed; and wherein the overlap representation corresponds to the width of the words claimed.

corresponding portion of the signature of the captured image of the physical document (Col. 4 and 5, lines 33 – 36 and 59 – 65; respectively, Zhao).

Regarding Claim 9, Zhao/Lienhart/Hale discloses a system, the signature(s) corresponding to the one or more generated images that have a threshold number of matches to the corresponding portion of the signature of the captured image of the physical document are retained for further consideration (Col. 4 and 9, lines 33 – 36 and 56 – 62; respectively, Zhao).

Regarding Claim 11, Zhao/Lienhart/Hale discloses a system, the signatures corresponding to the one or more generated images and the signature of the captured image of the physical document are generated at least in part upon a location of at least a portion of each word in the generated images and the captured image of the physical document, respectively (Col. 4, lines 33 – 36 and 47 – 49, Zhao⁴).

Regarding Claim 12, Zhao/Lienhart/Hale discloses a system, the signatures corresponding to the one or more generated images and the signature of the captured image of the physical document further generated at least in part upon a width of each word in the captured image and the generated images, respectively (Col. 4, lines 33 – 36 and 49 – 52, Zhao⁵).

⁴ Wherein the order of the characters corresponds to the location claimed.

Regarding Claim 19, Zhao/Lienhart/Hale discloses a system, further comprising a caching component that automatically generates an image of an electronic document at a time such electronic document is printed (Col. 4, lines 5 – 7, Zhao).

Regarding Claim 20, Zhao/Lienhart/Hale discloses a system, further comprising an artificial intelligence component that infers which printed documents should have associated stored images (Col. 4, lines 5 – 10, Zhao⁶).

Regarding Claim 21, Zhao/Lienhart/Hale discloses a system, further comprising an artificial intelligence component that excludes a subset of the generated images from the search based at least in part upon one of user state, user context, or user history (Col. 17, lines 17 – 23, Zhao⁷).

Regarding Claim 22, Zhao/Lienhart/Hale discloses a system, at least one of the generated images is associated with an entry within a data store, the entry comprising one or more of an image of a page of an electronic document or a signature that identifies the image of the page (Col. 4, lines 23 – 27, “a key”, Zhao), the signature based at least in part upon topological properties of words within the image of the page (Col. 4, lines 28 – 31 and 47 – 52, Zhao).

⁵ Wherein the overlap representation implies the width of the words as claimed.

⁶ Wherein the step of producing from a specific region corresponds to the step of inferring which printed documents ... as claimed.

Regarding Claim 33, Zhao/Lienhart/Hale discloses a system for indexing and/or retrieval of a document, comprising:

means for generating an image of an electronic document when the electronic document is printed (Col. 4, lines 5 – 7, Zhao⁸);

means for capturing an image of the document after the document has been printed (Col. 4, lines 5 – 7, Zhao);

means for generating a signature corresponding with the generated image (Col. 5, lines 51 – 65, Zhao);

means for generating a signature corresponding with the captured image (Col. 5, lines 51 – 65, Zhao);

means for storing the electronic document (Col. 19, lines 5 – 11, Zhao); and

means for iteratively comparing location of respective words and width of respective words within a portion of a signature associated with the captured image to the location of respective words and width of respective words within respective portions of signatures associated with the generated images (Col. 4, lines 28 – 31 and 47 – 52, Zhao; and Col. 10, lines 6 – 15, Lienhart) and excluding each generated image whose signature portion does not match the signature portion of the captured image, the portion of the signature associated with the captured image and the corresponding portions of the signatures respectively associated with the generated images that are compared become progressively

⁷ Wherein the step including when a document could not verify himself and routing it to the proper server corresponds to the step of excluding a subset of the generated images as claimed.

⁸ Wherein the prior art Zhao further discloses the printed document specifically in Col. 4 and 7, lines 33 – 38 and 25 – 35; respectively.

smaller with each iteration, where one or more iterations are performed until a predetermined threshold number of generated images remain (Fig. 5, Col. 5, lines 25 – 55, “Referring now to Fig. 5, a flowchart of the operations for verifying the integrity of stored information, such as a post-relocation image For integrity verification, the post-relocation image of a digitally signed imaged is reconverted to a pre-relocation image..... Thereafter, pre-relocation image produce a hash value (referred to as the ‘reconverted hash value’)... The digital signature of the digitally signed image is accessed and the hash value of the digital signature is recovered (block 520). This may be accomplished by running the digitally signed image through the digital signature algorithm being provided with a public key of the signatory for decode purposes. Thereafter, the recovered hash value is compared to the reconverted hash value (block 530)...”, wherein the step of comparing the hash value of the pre-relocation image (‘recovered hash value’) and the hash value (‘reconverted hash value’) of the post-relocation image correspond to the step of comparing a portion of a signature associated with captured image with corresponding portions of signatures respectively associated with generated images claimed; note that the hash values are portions of the signatures, see Col. 5, lines 4 - 6; also see Col. 6 – 7, lines 62 – 67 and 1 – 5 , “If the matching of the identifier ...This process continues until all entries in the import table have corresponding entries in the BRIT...”; wherein it is clear from Fig. 7 that such process is included in a loop starting with items 740 - 780 and 780-720. This involves repeating the comparison; therefore, it discloses an iteratively comparison as claimed;

Col. 7, lines 34 – 38, “Otherwise, the BRIT is not verified...”; wherein the step of “not verifying” corresponds to the step of excluding as claimed; Hale); **and** means for retrieving the electronic document (Col. 4, lines 30 – 33, Zhao).

Regarding Claim 34, Zhao/Lienhart/Hale discloses a system, further comprising:
means for generating a signature that includes features that are highly specific to the generated image (Col. 5, and 10 – 11, lines 51 – 58, and 64 – 67 and 1 – 5; respectively, Zhao); and
means for generating a signature corresponding to the captured image, the signature includes features that are highly specific to the captured image (Col. 5, and 10 – 11, lines 51 – 58, and 64 – 67 and 1 – 5; respectively, Zhao).

Regarding Claim 35, Zhao/Lienhart/Hale discloses a system, further comprising means for comparing the signature corresponding to the generated image with the signature corresponding to the captured image (Col. 5, lines 59 – 65, Zhao).

Regarding Claim 36, Zhao/Lienhart/Hale discloses a system, further comprising means for accounting for error that occurs when capturing the image of the printed document (Col. 13 – 14, lines 66 – 67 and 1 – 6, Zhao).

Regarding Claim 38, Zhao/Lienhart/Hale discloses a system that facilitates indexing and/or retrieval of a document, comprising:

a query component that receives an image of a printed document (Col. 4 and 17, lines 20 – 22 and 49 – 50, query interface; respectively, Zhao⁹);

a caching component that generates and stores an image corresponding to the image of the printed document prior to the query component receiving the image of the printed document (Col. 4 and 17, lines 5 – 7 and 49 – 50, database 729; respectively, Zhao); and

a comparison component that retrieves the stored image via comparing location of words and width of words within the stored image to location of words and width of words within the image of the printed document (Col. 4 and 17, lines 28 – 31 and 47 – 52, and 52 – 55, comparator 517; respectively, Zhao¹⁰), the comparison component iteratively compares a portion of a signature associated with the received image with corresponding portions of signatures respectively associated with the stored images and excludes each stored image whose signature does not match the signature of the received image to facilitate identification of a match to the printed document (Col. 6, lines 40 – 46, “can be used not only to authenticate analog forms of documents that exist primarily in digital form, but also to authenticate documents that exist primarily or only in analog form, for example paper checks and identification cards.”, Zhao), the portion of the signature associated with the received image and the portion of the signatures respectively associated with the stored images that are compared become progressively smaller with each iteration, where one or more iterations are performed

⁹ Wherein the prior art Zhao further discloses the printed document specifically in Col. 4 and 7, lines 33 – 38 and 25 – 35; respectively.

¹⁰ Wherein the order of the characters corresponds to the location claimed; and wherein the overlap representation corresponds to the width of the words claimed.

until a predetermined threshold number of signatures associated with the stored images remain (Fig. 5, Col. 5, lines 25 – 55, “Referring now to Fig. 5, a flowchart of the operations for verifying the integrity of stored information, such as a post-relocation image. For integrity verification, the post-relocation image of a digitally signed image is reconverted to a pre-relocation image..... Thereafter, pre-relocation image produce a hash value (referred to as the ‘reconverted hash value’).... The digital signature of the digitally signed image is accessed and the hash value of the digital signature is recovered (block 520). This may be accomplished by running the digitally signed image through the digital signature algorithm being provided with a public key of the signatory for decode purposes. Thereafter, the recovered hash value is compared to the reconverted hash value (block 530)...”, wherein the step of comparing the hash value of the pre-relocation image (‘recovered hash value’) and the hash value (‘reconverted hash value’) of the post-relocation image correspond to the step of comparing a portion of a signature associated with captured image with corresponding portions of signatures respectively associated with generated images claimed; note that the hash values are portions of the signatures, see Col. 5, lines 4 - 6; also see Col. 6 – 7, lines 62 – 67 and 1 – 5, “If the matching of the identifier ...This process continues until all entries in the import table have corresponding entries in the BRIT...”; wherein it is clear from Fig. 7 that such process is included in a loop starting with items 740 - 780 and 780-720. This involves repeating the comparison; therefore, it discloses an iteratively comparison as claimed; Col. 7, lines 34 – 38, “Otherwise, the BRIT is not verified...”; wherein the step of “not verifying” corresponds to the step of excluding as claimed; Hale).

Regarding Claim 39, Zhao/Lienhart/Hale discloses a computer readable medium having computer executable instructions stored thereon to return stored image of an electronic document to a user based at least in part upon topological word properties of at least one of captured image corresponding to the electronic document (Col. 4 and 17, lines 28 – 31 and 47 – 52, and 55 – 57, network server 719, Zhao) and an iterative comparison of a portion of a signature associated with the at least one captured image with corresponding portions of signatures respectively associated with the at least one stored image and excludes each stored image whose signature does not match the signature of the at least one captured image **to facilitate identification of a match to the printed document** (Col. 6, lines 40 – 46, “can be used not only to authenticate analog forms of documents that exist primarily in digital form, but also to authenticate documents that exist primarily or only in analog form, for example paper checks and identification cards.”, Zhao), the portion of the signature associated with the at least one captured image and the portion of the signatures respectively associated with the at least one stored image that are compared become progressively smaller with each iteration, where one or more iterations are performed until a predetermined threshold number of signatures associated with the at least one stored image remains (Fig. 5, Col. 5, lines 25 – 55, “Referring now to Fig. 5, a flowchart of the operations for verifying the integrity of stored information, such as a post-relocation image For integrity verification, the post-relocation image of a digitally signed imaged is reconverted to a pre-relocation image..... Thereafter, pre-relocation image produce a hash value (referred to as the

'reconverted hash value').... The digital signature of the digitally signed image is accessed and the hash value of the digital signature is recovered (block 520). This may be accomplished by running the digitally signed image through the digital signature algorithm being provided with a public key of the signatory for decode purposes. Thereafter, the recovered hash value is compared to the reconverted hash value (block 530)...", wherein the step of comparing the hash value of the pre-relocation image ('recovered hash value') and the hash value ('reconverted hash value') of the post-relocation image correspond to the step of comparing a portion of a signature associated with captured image with corresponding portions of signatures respectively associated with generated images claimed; note that the hash values are portions of the signatures, see Col. 5, lines 4 - 6; also see Col. 6 - 7, lines 62 - 67 and 1 - 5, "If the matching of the identifier ... This process continues until all entries in the import table have corresponding entries in the BRIT..."; wherein it is clear from Fig. 7 that such process is included in a loop starting with items 740 - 780 and 780-720. This involves repeating the comparison; therefore, it discloses an iteratively comparison as claimed; Col. 7, lines 34 - 38, "Otherwise, the BRIT is not verified..."; wherein the step of "not verifying" corresponds to the step of excluding as claimed; Hale), wherein the topological word properties comprise **(Applicant should duly note that** a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA

1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951)) at least width of respective words (Col. 4, lines 49 – 52, Zhao¹¹; and Col. 10, lines 6 – 15, Lienhart).

Regarding Claim 40, Zhao/Lienhart/Hale discloses a computer readable medium having a data structure thereon, the data structure comprising:

a component that receives image(s) of at least a portion of a printed document (Col. 4, lines 20 – 22, “receives the digital representation”, Zhao¹²);

a search component that facilitates retrieval of an electronic document (Col. 4, lines 44 – 47, “the first digital document is searched..”, Zhao), the electronic document corresponding to the image(s) associated with the printed document, the retrieval based at least in part upon corresponding word-level topological properties when comparing the image(s) associated with the printed document and generated image(s) of the electronic document (Col. 4, lines 28 – 31 and 47 – 52, Zhao), the word-level topological properties comprise at least width of words (Col. 4, lines 49 – 52, Zhao¹³; and Col. 10, lines 6 – 15, Lienhart); and

a comparison component that is associated with the search component and iteratively compares a portion of a signature associated with the image associated with the printed document with corresponding portions of signatures respectively associated with the generated images and excludes each generated image whose signature does

¹¹ Wherein the overlap representation implies the width of the words as claimed.

¹² Wherein the prior art Zhao further discloses the printed document specifically in Col. 4 and 7, lines 33 – 38 and 25 – 35; respectively.

not match the signature of the image associated with the printed document to facilitate identification of a match to the printed document (Col. 6, lines 40 – 46, “can be used not only to authenticate analog forms of documents that exist primarily in digital form, but also to authenticate documents that exist primarily or only in analog form, for example paper checks and identification cards.”, Zhao), the portion of the signature associated with the image associated with the printed document and the portion of the signatures respectively associated with the generated images that are compared become progressively smaller with each iteration, where one or more iterations are performed until a predetermined threshold number of signatures associated with generated images remain (Fig. 5, Col. 5, lines 25 – 55, “Referring now to Fig. 5, a flowchart of the operations for verifying the integrity of stored information, such as a post-relocation image For integrity verification, the post-relocation image of a digitally signed imaged is reconverted to a pre-relocation image..... Thereafter, pre-relocation image produce a hash value (referred to as the ‘reconverted hash value’).... The digital signature of the digitally signed image is accessed and the hash value of the digital signature is recovered (block 520). This may be accomplished by running the digitally signed image through the digital signature algorithm being provided with a public key of the signatory for decode purposes. Thereafter, the recovered hash value is compared to the reconverted hash value (block 530)...”, wherein the step of comparing the hash value of the pre-relocation image (‘recovered hash value’) and the hash value (‘reconverted hash value’) of the post-relocation image correspond to the step of comparing a portion

¹³ Wherein the overlap representation implies the width of the words as claimed.

of a signature associated with captured image with corresponding portions of signatures respectively associated with generated images claimed; note that the hash values are portions of the signatures, see Col. 5, lines 4 - 6; also see Col. 6 - 7, lines 62 - 67 and 1 - 5, "If the matching of the identifier ... This process continues until all entries in the import table have corresponding entries in the BRIT..."; wherein it is clear from Fig. 7 that such process is included in a loop starting with items 740 - 780 and 780-720. This involves repeating the comparison; therefore, it discloses an iteratively comparison as claimed; Col. 7, lines 34 - 38, "Otherwise, the BRIT is not verified..."; wherein the step of "not verifying" corresponds to the step of excluding as claimed; Hale).

Regarding Claim 42, Zhao/Lienhart/Hale discloses a signal having one or more data packets that facilitate indexing and/or retrieval of a document, comprising:

- a request for retrieval of a stored image of at least a portion of an electronic document (Col. 4, lines 31 - 33, Zhao);

- a signature of an electronic image of a printed document corresponding to a signature of the requested stored image associated with of the electronic document, the signatures based at least in part upon word layout of the images (Col. 5, lines 51 - 56, "the digital signature for the digital representation", Zhao), the signature of the electronic image is a hash table that contains a plurality of table locations where a respective value corresponding to a respective segment of the electronic image is entered into a respective table location for each segment of the electronic image, and the signature of the requested stored image is a hash table that contains a plurality of table locations where a respective value corresponding to a respective segment of the requested

stored image is entered into a respective table location for each segment of the requested stored image (Fig. 4, items 440-1 and 440-m, Col. 5 and 6, lines 17 – 29 and 9 – 15; respectively, Hale); and

result based in part on a comparison of the signature of the electronic image of the printed document with the signature of the requested stored image associated with the electronic document, wherein the result is associated with one or more stored images that meet comparison (Col. 4, lines 28 – 31 and 47 – 52, Zhao).

12. Claims 5 – 6, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao (US Patent No. 6,487,301 B1, issued: November 26, 2004), in view of Lienhart et al. (Lienhart hereinafter) (US 6,470,094), in view of Hale et al. (Hale hereinafter) (US 6,928,548), and further in view of Ming Ye et al. (Ye hereinafter) (Non-Patent Literature: "Document Image Matching and Annotation Lifting", 2001 IEEE).

Regarding Claim 5, Zhao/Lienhart/Hale discloses all the limitations as disclosed above including generated images all the limitations as disclosed above including generated images. However, Zhao/Lienhart/Hale is silent with respect to confidence score. On the other hand, Ye discloses a scoring component that assigns confidence scores corresponding to a subset of the generated images that are searched against (Page 2, Section 2., Matching Score, "the matching score ...", Ye). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

Zhao/Lienhart/Hale by incorporating the scoring component, in the same conventional manner as disclosed by Ye (Page 2, Section 2., Matching Score, Ye). Skilled artisan would have found it motivated to use such a modification in order to minimize the interference of possible annotations, see Ye (Page 2, Section 2., Matching Score, Ye).

Regarding Claim 6, the combination of Zhao in view of Lienhart in view of Hale and further in view of Ye (Zhao/Lienhart/Hale/Ye hereinafter) discloses a system, a generated image with the highest confidence score is selected as the match to the captured image of the document (Page 4, Section 4, "Line Tracing Protocol", proximity measure ... with the highest score", Ye).

Regarding Claim 10, Zhao/Lienhart/Hale/Ye discloses a system, further comprising a component that assigns confidence scores when a threshold number of signatures are being retained for further consideration (Page 2, Section 2., Matching Score, "the matching score ...", Ye).

13. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao (US Patent No. 6,487,301 B1, issued: November 26, 2004), in view of Lienhart et al. (Lienhart hereinafter) (US 6,470,094), in view of Hale et al. (Hale hereinafter) (US 6,928,548), and further in view of Bresler et al. (Bresler hereinafter) (US Patent App. Pub. No. 2003/0152293 A1, filed: January 24, 2003).

Regarding Claim 41, Zhao/Lienhart/Hale discloses all the limitations as disclosed above. However, Zhao/Lienhart/Hale is silent with respect to personal digital assistant. On the other hand, Bresler discloses a personal digital assistant (Fig. 8, Page 8, [0149], lines 5 – 7, Bresler). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zhao/Lienhart/Hale by incorporating the personal digital assistant to the system, in the same conventional manner as disclosed by Bresler (Fig. 8, Page 8, [0149], lines 5 – 7, Bresler). Skilled artisan would have found it motivated to use such a modification in order to provide an imager-enabler device, either stand-alone or connected via a wireless network, see Bresler (Page 7, [0146], lines 1 – 6, Bresler).

14. Claims 13, 23, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao (US Patent No. 6,487,301 B1, issued: November 26, 2004), in view of Lienhart et al. (Lienhart hereinafter) (US 6,470,094), in view of Hale et al. (Hale hereinafter) (US 6,928,548), and further in view of Shin-Ywan Wang et al. (Wang hereinafter) (Non-Patent Literature: "Block Selection: A Method for Segmenting Page Image of Various Editing Styles", Canon Information Systems, 1995 IEEE).

Regarding Claim 13, Zhao/Lienhart/Hale discloses all the limitations as disclosed above including generated images and captured image of the physical documents. However, Zhao/Lienhart/Hale is silent with respect to trees. On the other hand, Wang discloses: a component that generates at least one tree representation related to the

generated images and the captured image of the physical document, the at least one tree representation being a hierarchical representation of the generated images and the captured image of the physical document, wherein the at least one tree representation conveys which segments of the generated images and which segments of the captured image of the physical document include a word (Page 128, "which segments the page image and converts it into another computer readable format – a hierarchical tree description form which the page content arrangement can be realized. Each node on the tree maps to an object on the page ...", Wang). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zhao/Lienhart/Hale by incorporating the component that generates tree representation , in the same conventional manner as disclosed by the Wang (Page 128, "which segments the page image and converts it into another computer readable format – a hierarchical tree description form which the page content arrangement can be realized. Each node on the tree maps to an object on the page ...", Wang). Skilled artisan would have found it motivated to use such a modification to provide categorized page blocks for easy selection, to generate a robust result but also, and to expand to broader document image processing applications, see Wang (Page 1 and 133, "Abstract" and "Conclusion", Wang).

Furthermore, the combination of Zhao in view of Lienhart in view of Hale and further in view of Wang (Zhao/Lienhart/Hale/Wang hereinafter) discloses: a comparison component that compares a tree representation related to the generated images with the tree representation related to the captured image of the physical document (Col. 4,

lines 28 – 38, “compare the read first authentication information with second authentication information”, Zhao; and Page 128, Abstract, Wang).

Regarding Claim 23, Zhao/Lienhart/Hale/Wang discloses a system, the one or more of the image of the page of the electronic document or the signature that identifies the image of the page associated with one or more of a URL that identifies a location of the electronic document (Col. 17, lines 17 – 19, Zhao), the electronic document (Col. 4, lines 47 – 49, “first digital document”, Zhao), a hierarchical tree representation of the image of the page of the electronic document (Page 128, Abstract, Wang), OCR of the image of the page (Col. 4, lines 39 – 44, Zhao), data relating to a number of times the image of the page has been accessed, customer records (Col. 15, lines 43 – 46, Zhao), payment information (Col. 15, lines 12 – 14, Zhao), and workflow information (Col. 18, lines 53 – 58, Zhao), or combination thereof.

Regarding Claim 37, Zhao/Lienhart/Hale/Wang discloses a system, further comprising:

means for partitioning the generated image into a plurality of segments (Page 128, Abstract, “the formed blocks are described by a hierarchical tree to reflect the page arrangement ...”, Wang);

means for partitioning the captured image into a plurality of segments (Page 129, 1. Introduction, “the blocks with certain logic relationship are liked as parent-child nodes”, Wang) where each segment corresponds to respective segments associated

with the generated image (Page 131, 2.6 Formation of text blocks, "the closeness between text units is based on the statistical analysis of horizontal and vertical gaps between neighboring text units of the same tree level ...", Wang); and

means for comparing a segment of the stored image with a corresponding segment of the captured image (Col. 5, lines 59 – 65, Zhao).

15. Claims 14 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao (US Patent No. 6,487,301 B1, issued: November 26, 2004), in view of Lienhart et al. (Lienhart hereinafter) (US 6,470,094), in view of Hale et al. (Hale hereinafter) (US 6,928,548), and further in view of Bloomberg (US Patent No. 5,181,255, issued: January 19, 1993).

Regarding Claim 14, Zhao/Lienhart/Hale discloses all the limitations as disclosed above including captured images of the physical documents. However, Zhao/Lienhart/Hale is silent with respect to reducing noise. On the other hand, Bloomberg discloses: a component that reduces noise in the captured image of the physical document (Col. 6, lines 55 – 57, Bloomberg). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zhao/Lienhart/Hale by incorporating noise reduction to the captured image, in the same conventional manner as disclosed by Bloomberg (Col. 6, lines 55 – 57, Bloomberg). Skilled artisan would have found it motivated to use such a modification in order to provide reduced scale operations since reduced scale operations operate in an efficient

manner and more readily segregate handwritten and machine printed text, see Bloomberg (Col. 6, lines 45 – 55, Bloomberg).

Regarding Claim 15, the combination of Zhao in view of Lienhart in view of Hale and further in view of Bloomberg (Zhao/Lienhart/Hale/Bloomberg hereinafter) discloses a system, further comprising a component that generates a grayscale image of the captured image of the physical document (Col. 4, lines 33 – 36, Zhao; and Col. 4, lines 42 – 44, Bloomberg).

Regarding Claim 16, Zhao/Lienhart/Hale/Bloomberg discloses a system, further comprising a connecting component that connects characters within a word of the generated images and the captured image without connecting words of the generated images and the captured image (Col. 4, lines 25 – 28, Bloomberg¹⁴).

Regarding Claim 17, Zhao/Lienhart/Hale/Bloomberg discloses a system, the generated images and the captured image being binary images, the connecting component performs a pixel dilation of the binary images (Col. 5, lines 1 – 7, Bloomberg).

Regarding Claim 18, Zhao/Lienhart/Hale/Bloomberg discloses a system, the connecting component alters resolution of the captured image of the physical document

¹⁴ Wherein the letters corresponds to the characters within a word as claimed.

to facilitate connecting characters within a word of the captured image of the physical document without connecting disparate words within the captured image of the physical document (Col. 4, lines 33 – 36, Zhao; and Col. 4 and 9, lines 25 – 28 and 41 – 44; respectively, Bloomberg¹⁵).

Response to Arguments

16. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., remarks: "...multi-tier comparison...", page 20, "performs multiple iterations", "...with a group respective generated images...to identify...to narrow the number of potential choices..." page 21, "...generated image by finding..." page 23) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

17. Applicant argues that the applied art fails to disclose; "a comparison component that iteratively compares a portion of a signature associated with the captured image with corresponding portions of signatures respectively associated with the generated images and excludes each generated image whose portion of the signature does not match the portion of the signature of the captured image to facilitate location of a match to the physical document, the portion of the signature associated with the captured

¹⁵ Wherein the letters corresponds to the characters within a word as claimed.

image and the portion of the signatures respectively associated with the generated images that are compared become progressively smaller with each iteration, where one or more iterations are performed until a predetermined threshold number of generated images remain."

Examiner respectfully disagrees. Zhao/Lienhart/Hale does disclose: a comparison component that iteratively compares a portion of a signature associated with the captured image with corresponding portions of signatures respectively associated with the generated images (Col. 5, lines 51 – 65, Zhao; and Col. 7, lines 25 – 30, "...The digital representation may have been made from an analog form and the physical part of the analog form", and Col. 4, lines 33 – 36, "...analog form 203 is a printed or faxed document...", Zhao) and excludes each generated image whose portion of the signature does not match the portion of the signature of the captured image to facilitate location of a match to the physical document (Col. 6, lines 40 – 46, "can be used not only to authenticate analog forms of documents that exist primarily in digital form, but also to authenticate documents that exist primarily or only in analog form, for example paper checks and identification cards.", Zhao), the portion of the signature associated with the captured image and the portion of the signatures respectively associated with the generated images that are compared become progressively smaller with each iteration, where one or more iterations are performed until a predetermined threshold number of generated images remain (Fig. 5, Col. 5, lines 25 – 55, "Referring now to Fig. 5, a flowchart of the operations for verifying the integrity of stored information, such as a post-relocation image For integrity verification, the post-

relocation image of a digitally signed image is reconverted to a pre-relocation image..... Thereafter, pre-relocation image produce a hash value (referred to as the 'reconverted hash value').... The digital signature of the digitally signed image is accessed and the hash value of the digital signature is recovered (block 520). This may be accomplished by running the digitally signed image through the digital signature algorithm being provided with a public key of the signatory for decode purposes. Thereafter, the recovered hash value is compared to the reconverted hash value (block 530)....", wherein the step of comparing the hash value of the pre-relocation image ('recovered hash value') and the hash value ('reconverted hash value') of the post-relocation image correspond to the step of comparing a portion of a signature associated with captured image with corresponding portions of signatures respectively associated with generated images claimed; note that the hash values are portions of the signatures, see Col. 5, lines 4 - 6; also see Col. 6 - 7, lines 62 - 67 and 1 - 5 , "If the matching of the identifier ... This process continues until all entries in the import table have corresponding entries in the BRIT..."; wherein it is clear from Fig. 7 that such process is included in a loop starting with items 740 - 780 and 780-720. This involves repeating the comparison; therefore, it discloses an iteratively comparison as claimed; Col. 7, lines 34 - 38, "Otherwise, the BRIT is not verified..."; wherein the step of "not verifying" corresponds to the step of excluding as claimed; Hale).

REASONS FOR ALLOWANCE

18. Claims 24 – 32 are allowable in light of the applicant's arguments and in light of the prior art made of record.

Reason for Indicating Allowable Subject Matter

19. The following is an examiner's statement of reasons for allowance: Upon searching a variety of databases, the examiner respectfully submits that "generating one or more signatures corresponding to at least a portion of one or more of the generated images, the signatures generated at least in part upon word-layout within the image(s), the one or more signatures is a hash table that contains a plurality of table locations where a respective value corresponding to a respective segment of the generated image is entered into a respective table location for each segment of the generated image; and generating a signature corresponding to at least a portion of the captured image, the signature is generated based at least in part upon word-layout within the captured image, the signature is a hash table that contains a plurality of table locations where a respective value corresponding to a respective segment of the captured image is entered into a respective table location for each segment of the captured image" in conjunction with all other limitations of the dependent and independent claims are not taught nor suggested by the prior art of record. Therefore, all pending claims 24 – 32 are hereby allowed.

20. Any comments considered necessary by applicant must be submitted no later than the payment of the issues fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Points Of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GIOVANNA COLAN whose telephone number is (571)272-2752. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Giovanna Colan
Examiner
Art Unit 2162
April 10, 2008

/Jean M Corrielus/
Primary Examiner, Art Unit 2162